

WEST Search History

DATE: Tuesday, August 19, 2003

<u>Set Name</u> side by side	<u>Query</u>	<u>Hit Count</u>	<u>Set Name</u> result set
<i>DB=USPT,PGPB,JPAB,EPAB,DWPI; PLUR=YES; OP=ADJ</i>			
L11	L10 not l9	0	L11
L10	L7 not l8	3	L10
L9	L7 not l6	3	L9
L8	L7 and l6	2	L8
L7	(blood milk) with subtilisin	5	L7
L6	(blood milk) with protease	5	L6
L5	blood with protease	2784	L5
L4	L3 with wash	25	L4
L3	stain with protease	549	L3
<i>DB=USPT; PLUR=YES; OP=ADJ</i>			
L2	6586221	1	L2
L1	6379942	1	L1

END OF SEARCH HISTORY

WEST[Generate Collection](#)[Print](#)**Search Results - Record(s) 1 through 3 of 3 returned.**☐ 1. Document ID: US 20020137156 A1

L10: Entry 1 of 3

File: PGPB

Sep 26, 2002

PGPUB-DOCUMENT-NUMBER: 20020137156

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020137156 A1

TITLE: CONTROLLED DISSOLUTION CROSSLINKED PROTEIN CRYSTALS

PUBLICATION-DATE: September 26, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
MARGOLIN, ALEXEY L.	NEWTON	MA	US	
PERSICETTI, ROSE A.	STOW	MA	US	
ST. CLAIR, NANCY L.	ANN ARBOR	MI	US	
KHALAF, NAZER K.	Worcester	MA	US	
SHENOY, BHAMI C.	Woburn	MA	US	

US-CL-CURRENT: [435/174](#)[Full](#) [Title](#) [Citation](#) [Front](#) [Review](#) [Classification](#) [Date](#) [Reference](#) [Sequences](#) [Attachments](#)[KMC](#) [Draw Desc](#) [Image](#)☐ 2. Document ID: US 6140475 A

L10: Entry 2 of 3

File: USPT

Oct 31, 2000

US-PAT-NO: 6140475

DOCUMENT-IDENTIFIER: US 6140475 A

**** See image for Certificate of Correction ****

TITLE: Controlled dissolution crosslinked protein crystals

[Full](#) [Title](#) [Citation](#) [Front](#) [Review](#) [Classification](#) [Date](#) [Reference](#) [Sequences](#) [Attachments](#)[KMC](#) [Draw Desc](#) [Image](#)☐ 3. Document ID: KR 344976 B WO 9510615 A1 AU 9480157 A ZA 9408086 A NO 9601468 A EP 723590 A1 FI 9601631 A CZ 9601065 A3 NZ 274998 A BR 9407825 A JP 09504170 W CN 1133068 A AU 700373 B RU 2136756 C1 MX 196072 B CZ 289323 B6 TW 448230 A

L10: Entry 3 of 3

File: DWPI

Nov 23, 2002

DERWENT-ACC-NO: 1995-161800

DERWENT-WEEK: 200333

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TITLE: Carbonyl hydrolase variants with 2 or more amino acid substitutions - esp. Bacillus lentus subtilisin variants with altered stability and/or activity, useful in cleaning compsns.

Full	Title	Citation	Print	Review	Classification	Date	Reference	Sequences	Attachments
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------

HTML	Crawl Desc	Clip Image	Image
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Terms	Documents
L7 not 18	3

Display Format:[-](#)[Change Format](#)[Previous Page](#)[Next Page](#)

WEST[Generate Collection](#)[Print](#)**Search Results - Record(s) 1 through 2 of 2 returned.**☐ 1. Document ID: US 5260207 A

L8: Entry 1 of 2

File: USPT

Nov 9, 1993

US-PAT-NO: 5260207

DOCUMENT-IDENTIFIER: US 5260207 A

**** See image for Certificate of Correction ****

TITLE: Engineering of electrostatic interactions at metal ion binding sites for the stabilization of proteins

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RMC	Draw Desc	Image
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	-----	-----------	-------

☐ 2. Document ID: US 4908773 A

L8: Entry 2 of 2

File: USPT

Mar 13, 1990

US-PAT-NO: 4908773

DOCUMENT-IDENTIFIER: US 4908773 A

TITLE: Computer designed stabilized proteins and method for producing same

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	RMC	Draw Desc	Image
------	-------	----------	-------	--------	----------------	------	-----------	-----------	-------------	--------	-----	-----------	-------

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Terms	Documents
L7 and l6	2

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NEWS 3	Feb 24	PCTGEN now available on STN
NEWS 4	Feb 24	TEMA now available on STN
NEWS 5	Feb 26	NTIS now allows simultaneous left and right truncation
NEWS 6	Feb 26	PCTFULL now contains images
NEWS 7	Mar 04	SDI PACKAGE for monthly delivery of multifile SDI results
NEWS 8	Mar 24	PATDPAFULL now available on STN
NEWS 9	Mar 24	Additional information for trade-named substances without structures available in REGISTRY
NEWS 10	Apr 11	Display formats in DGENE enhanced
NEWS 11	Apr 14	MEDLINE Reload
NEWS 12	Apr 17	Polymer searching in REGISTRY enhanced
NEWS 13	AUG 15	Indexing from 1937 to 1946 added to records in CA/CAPLUS
NEWS 14	Apr 21	New current-awareness alert (SDI) frequency in WPIDS/WPINDEX/WPIX
NEWS 15	Apr 28	RDISCLOSURE now available on STN
NEWS 16	May 05	Pharmacokinetic information and systematic chemical names added to PHAR
NEWS 17	May 15	MEDLINE file segment of TOXCENTER reloaded
NEWS 18	May 15	Supporter information for ENCOMPPAT and ENCOMPLIT updated
NEWS 19	May 19	Simultaneous left and right truncation added to WSCA
NEWS 20	May 19	RAPRA enhanced with new search field, simultaneous left and right truncation
NEWS 21	Jun 06	Simultaneous left and right truncation added to CBNB
NEWS 22	Jun 06	PASCAL enhanced with additional data
NEWS 23	Jun 20	2003 edition of the FSTA Thesaurus is now available
NEWS 24	Jun 25	HSDB has been reloaded
NEWS 25	Jul 16	Data from 1960-1976 added to RDISCLOSURE
NEWS 26	Jul 21	Identification of STN records implemented
NEWS 27	Jul 21	Polymer class term count added to REGISTRY
NEWS 28	Jul 22	INPADOC: Basic index (/BI) enhanced; Simultaneous Left and Right Truncation available
NEWS 29	AUG 05	New pricing for EUROPATFULL and PCTFULL effective August 1, 2003
NEWS 30	AUG 13	Field Availability (/FA) field enhanced in BEILSTEIN
NEWS 31	AUG 15	PATDPAFULL: one FREE connect hour, per account, in September 2003
NEWS 32	AUG 15	PCTGEN: one FREE connect hour, per account, in September 2003
NEWS 33	AUG 15	RDISCLOSURE: one FREE connect hour, per account, in September 2003
NEWS 34	AUG 15	TEMA: one FREE connect hour, per account, in September 2003
NEWS 35	AUG 18	Data available for download as a PDF in RDISCLOSURE
NEWS 36	AUG 18	Simultaneous left and right truncation added to PASCAL
NEWS 37	AUG 18	FROSTI and KOSMET enhanced with Simultaneous Left and Right Truncation
NEWS 38	AUG 18	Simultaneous left and right truncation added to ANABSTR
NEWS EXPRESS	April 4	CURRENT WINDOWS VERSION IS V6.01a, CURRENT MACINTOSH VERSION IS V6.0b(ENG) AND V6.0Jb(JP),

AND CURRENT DISCER FILE IS DATED 01 APRIL 2003

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=> file stnguide		
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FULL ESTIMATED COST	0.21	0.21

FILE 'STNGUIDE' ENTERED AT 18:00:43 ON 19 AUG 2003
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 LAST RELOADED: Aug 15, 2003 (20030815/UP).

=> s stain and (swatch or textile or cotton)

	0 STAIN
	0 SWATCH
	6 TEXTILE
	12 TEXTILES
	14 TEXTILE
	(TEXTILE OR TEXTILES)
	0 COTTON
L1	0 STAIN AND (SWATCH OR TEXTILE OR COTTON)

=> s stain

	0 STAIN
L2	0 STAIN

=> s subtilisin

	0 SUBTILISIN
L3	0 SUBTILISIN

=> s textile

	6 TEXTILE
	12 TEXTILES
L4	14 TEXTILE
	(TEXTILE OR TEXTILES)

=> d

L4 ANSWER 1 OF 14 STNGUIDE COPYRIGHT 2003 ACS, JST, FIZ-K on STN

AN 547 STNGUIDE
 DBN ZCA - The Chemical Abstracts File for 1907-present with zero connect hour pricing
 DESC The ZCA File is a bibliographic database available from CAS (Chemical Abstracts Service) covering international journals, patents, patent families, technical reports, books, conference proceedings, and dissertations from all areas of chemistry, biochemistry, chemical

engineering, and related sciences from 1907 to the present. Electronic-only journals and Web preprints are also covered. The records from 1967 to the present contain bibliographic information, in-depth substance and subject indexing, including CAS Registry Numbers (R), and abstracts. The pre-1967 records contain only the bibliographic information and abstracts.

Page images for the CA abstracts 1907-1966 are included. These images are TIFF images. Any program that handles Tiff images compressed in Group 4 fax format, e.g., STN Express with Discover!, may be used to capture images from DISPLAY. The page images may also be viewed in DISPLAY while accessing CAPLUS through STN on the Web.

Subject and substance indexing for the 7th Collective Index (7CI) (1962-1966), the 6th Collective Index (6CI) (1957-1961), the 5th Collective Index (5CI) (1947-1956), and the 4th Collective Index (4CI) (1937-1946) are also available.

Cited references are included for journals, conference proceedings, and basic patents from the US, EPO, WIPO, and German patent offices added to the CAS databases from 1999 to the present. Beginning in 2003, patent examiner citations from British and French basic patents are also included. In addition, cited references are being added gradually to 1998 records in the CAS database.

Hot links giving you point-and-click access from ZCA to cited URLs, are available while using STN Express with Discover! and STN on the Web. ZCAplus is a more recent and more comprehensive file than the ZCA File. CAPLUS contains all the records included in the ZCA File plus records for recent publications that have not yet been fully indexed. In addition, ZCAplus contains records for all articles from nearly 1,500 key chemical journals since October 1994, including records for document types not covered in the ZCA File such as letters to the editor or news announcements. ZCAplus is updated daily with new records and weekly with indexing information.

The LCA (Learning CA) File is a training database for learning how to use the CA and CAPLUS files.

Left truncation may be used in the Basic Index only.

ZCA contains thesauri for records from 1967 to the present in the Controlled Term (/CT) field for the CA Lexicon, in the Role (/RL) field for the CAS roles, and in the International Patent Classification fields. In addition, a thesaurus is also available for CA Sections (/CC) for records from 1907 to the present.

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Columbus, Ohio 43210-0012 USA
Phone: 614-447-3600
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=> d 1-14 dbn

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DBN ZCA - The Chemical Abstracts File for 1907-present with zero connect hour pricing

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DBN TEXTILETECH - **Textile** Technology Digest

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DBN WTEXTILES - World **Textiles**

L4 ANSWER 8 OF 14 STNGUIDE COPYRIGHT 2003 ACS, JST, FIZ-K on STN

DBN CIN - Chemical Industry Notes

L4 ANSWER 9 OF 14 STNGUIDE COPYRIGHT 2003 ACS, JST, FIZ-K on STN

DBN TRIBO - TRIBology Index

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DBN BIOTECHNO - Elsevier BIOTECHNOBASE

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COST IN U.S. DOLLARS

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=> s textile#

L5 14 TEXTILE#

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L5 ANSWER 1 OF 14 STNGUIDE COPYRIGHT 2003 ACS, JST, FIZ-K on STN

DBN ZCA - The Chemical Abstracts File for 1907-present with zero connect hour pricing

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L5 ANSWER 5 OF 14 STNGUIDE COPYRIGHT 2003 ACS, JST, FIZ-K on STN

DBN PROMT - Predicasts Overview of Markets and Technology

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DBN TEXTILETECH - **Textile** Technology Digest

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DBN WTEXTILES - World **Textiles**

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ENTRY	SESSION
0.54	1.23

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=> s stain (5a) protease
L6 179 STAIN (5A) PROTEASE

=> s l6 (5a) fix?
L7 0 L6 (5A) FIX?

=> s l6 (5a) crosslink?
L8 0 L6 (5A) CROSSLINK?

=> s stain (5a) (swatch or textile or cotton)
L9 1785 STAIN (5A) (SWATCH OR TEXTILE OR COTTON)

=> s l6 and l9
L10 17 L6 AND L9

=> dup rem l10
PROCESSING COMPLETED FOR L10
L11 12 DUP REM L10 (5 DUPLICATES REMOVED)

=> d 1-12

L11 ANSWER 1 OF 12 HCAPLUS COPYRIGHT 2003 ACS on STN
AN 2002:126201 HCAPLUS

DN 136:196191
 TI **Stain or textile fiber composition binding**
 domain-containing chimeric enzymes for use in detergent
 IN Shimotsuura, Isao; Tobe, Seiichi
 PA Lion Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 39 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002051768	A2	20020219	JP 2000-244723	20000811
PRAI	JP 2000-244723		20000811		

L11 ANSWER 2 OF 12 SCISEARCH COPYRIGHT 2003 THOMSON ISI on STN DUPLICATE 1
 AN 2001:796309 SCISEARCH
 GA The Genuine Article (R) Number: 477UX
 TI Characterization and wash performance analysis of an SDS-stable alkaline
 protease from a Bacillus sp.
 AU Oberoi R; Beg Q K; Puri S; Saxena R K; Gupta R (Reprint)
 CS Univ Delhi, Dept Microbiol, S Campus, Benito Juarez Marg, New Delhi
 110021, India (Reprint); Univ Delhi, Dept Microbiol, New Delhi 110021,
 India
 CYA India
 SO WORLD JOURNAL OF MICROBIOLOGY & BIOTECHNOLOGY, (17 SEP 2001) Vol. 17, No.
 5, pp. 493-497.
 Publisher: KLUWER ACADEMIC PUBL, SPUIBOULEVARD 50, PO BOX 17, 3300 AA
 DORDRECHT, NETHERLANDS.
 ISSN: 0959-3993.
 DT Article; Journal
 LA English
 REC Reference Count: 15
 ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

L11 ANSWER 3 OF 12 TEXTILETECH COPYRIGHT 2003 Inst. of Textile Technology
 on STN
 AN 597942 TEXTILETECH
 DN 199606169
 TI There's a Solution for Every Common Table-Linen Stain, Experts Say.
 AU Rossman J.
 SO Textile Rental, 79, No. 10: 64+, 4 pages (June 1996).
 CODEN: TERNDQ
 DT Journal
 LA English

L11 ANSWER 4 OF 12 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 1992:594077 HCAPLUS
 DN 117:194077
 TI Laundry detergent compositions for cleaning blood stains
 IN Kamioka, Masatsugu; Ushio, Shozo
 PA Shin-Etsu Chemical Industry Co., Ltd., Japan; Yuai Kasei K. K.
 SO Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 04202300	A2	19920723	JP 1990-331767	19901129
PRAI	JP 1990-331767		19901129		

L11 ANSWER 5 OF 12 TEXTILETECH COPYRIGHT 2003 Inst. of Textile Technology
 on STN
 AN 518727 TEXTILETECH
 DN 198802868
 TI REMOVAL OF PROTEIN **STAINS** FROM FABRICS -- PRESOAKING WITH
PROTEASE -- EFFECT OF MECHANICAL ACTION FOR DETERGENCY AND DAMAGE

OF COTTON FABRICS SOILED H EPIDERMAL STRATUM CORNEUM DE S.
 AU Okamoto I.; Minagawa M.
 CS Osaka Kyoiku Univ; Osaka City Univ
 SO Sen-i Seihin Shohi Kagaku, 28, No. 12: 522-547 (Dec. 1987). Reference(s):
 10 refs.
 CODEN: SESKB9
 DT Journal
 LA Japanese

L11 ANSWER 6 OF 12 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 1985:562200 HCAPLUS
 DN 103:162200
 TI Studies on the removal of blood protein stains from fabrics. Part 3.
 Influence of substrate specificity and activity of protease on the removal
 of blood protein stains
 AU Tokoro, Yasuko; Minagawa, Motoi
 CS Kanazawa Univ., Ishikawa, Japan
 SO Sen'i Seihin Shohi Kagaku (1985), 26(3), 123-9
 CODEN: SESKB9; ISSN: 0037-2072
 DT Journal
 LA Japanese

L11 ANSWER 7 OF 12 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 1984:512798 HCAPLUS
 DN 101:112798
 TI Enzyme-containing liquid washing and cleaning composition
 IN Crossin, Michael Christopher
 PA Colgate-Palmolive Co., USA
 SO Ger. Offen., 41 pp.
 CODEN: GWXXBX
 DT Patent
 LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 3344097	A1	19840614	DE 1983-3344097	19831207
	DE 3344097	C2	19940127		
	ZA 8309050	A	19850731	ZA 1983-9050	19831205
	SE 8306839	A	19840614	SE 1983-6839	19831212
	SE 460726	B	19891113		
	SE 460726	C	19900308		
	FI 8304555	A	19840614	FI 1983-4555	19831212
	FI 74731	B	19871130		
	FI 74731	C	19880310		
	NO 8304560	A	19840614	NO 1983-4560	19831212
	NO 159288	B	19880905		
	NO 159288	C	19881214		
	AU 8322291	A1	19840621	AU 1983-22291	19831212
	AU 558368	B2	19870129		
	BR 8306834	A	19840724	BR 1983-6834	19831212
	ES 527960	A1	19851001	ES 1983-527960	19831212
	CA 1208578	A1	19860729	CA 1983-443066	19831212
	BE 898436	A1	19840613	BE 1983-212030	19831213
	DK 8305729	A	19840614	DK 1983-5729	19831213
	DK 159501	B	19901022		
	DK 159501	C	19910408		
	FR 2537597	A1	19840615	FR 1983-19948	19831213
	FR 2537597	B1	19891208		
	GB 2131826	A1	19840627	GB 1983-33202	19831213
	GB 2131826	B2	19861001		
	NL 8304291	A	19840702	NL 1983-4291	19831213
	CH 657146	A	19860815	CH 1983-6647	19831213
	AT 8304336	A	19920215	AT 1983-4336	19831213
	AT 395172	B	19921012		
PRAI	US 1982-449326		19821213		

L11 ANSWER 8 OF 12 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 1984:70373 HCAPLUS

DN 100:70373
TI Stain remover and methods
IN Penz, Peter, Jr.
PA Fed. Rep. Ger.
SO Ger. Offen., 10 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 3223568	A1	19831229	DE 1982-3223568	19820624
PRAI	DE 1982-3223568		19820624		

L11 ANSWER 9 OF 12 WPIDS COPYRIGHT 2003 THOMSON DERWENT on STN
AN 1982-23235E [12] WPIDS
TI Enzyme-contg. bleaching detergent with improved storage stability - contg. percarbonate in form of hollow particles and e.g. protease, lipase or amylase.
DC D16 D25 E37
PA (KAOS) KAO SOAP CO LTD
CYC 1
PI JP 57028197 A 19820215 (198212)* 6p
JP 60021720 B 19850529 (198525)
ADT JP 57028197 A JP 1980-101941 19800725
PRAI JP 1980-101941 19800725
IC C11D003-39; C11D007-42

L11 ANSWER 10 OF 12 HCAPLUS COPYRIGHT 2003 ACS on STN
AN 1978:461355 HCAPLUS
DN 89:61355
TI Removal of proteins from fabrics by **protease**. Part 7. Skin grime **stains** deposited on clothes
AU Minagawa, Motoi; Okamoto, Ikuko
CS Osaka City Univ., Osaka, Japan
SO Sen'i Seihin Shohi Kagaku (1978), 19(3), 34-43
CODEN: SESKB9; ISSN: 0037-2072
DT Journal
LA Japanese

L11 ANSWER 11 OF 12 HCAPLUS COPYRIGHT 2003 ACS on STN
AN 1977:585944 HCAPLUS
DN 87:185944
TI Removal of protein from fabrics by **protease**. Washing of protein-**stains** denatured by heat
AU Minagawa, Motoi; Ishikawa, Misako; Nakajima, Sachiko
CS Osaka City Univ., Osaka, Japan
SO Osaka-shiritsu Daigaku Seikatsukagakubu Kiyo (1977), Volume Date 1976, 24, 41-8
CODEN: ODSKDS; ISSN: 0385-8642
DT Journal
LA Japanese

L11 ANSWER 12 OF 12 HCAPLUS COPYRIGHT 2003 ACS on STN
AN 1976:76172 HCAPLUS
DN 84:76172
TI Detergent materials containing enzymes
IN Inamorato, Jack T.; Hunter, Robert Tweedy, Jr.
PA Colgate-Palmolive Co., USA
SO U.S., 7 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3931034	A	19760106	US 1973-389762	19730820
PRAI	US 1968-733279		19680531		

=> d 1-12 ab

L11 ANSWER 1 OF 12 HCAPLUS COPYRIGHT 2003 ACS on STN

AB Chimeric enzymes comprising a peptide having affinity for **stain** or **textile** fiber compn. and an enzyme having the similar affinity, including non-cellulolytic enzymes, are disclosed. Peptides having affinity for polysaccharides, proteins, or lipids, such as mutase muitein binding domain, amylase starch-binding domain, glucan-binding domain of .beta.-glucosidase or glucosyltransferase, glucan-binding protein, chitin-binding protein, .beta.-1,3-glucan-binding protein, cellulose-binding protein, lectin, cellulase, xylanase, mannanase, chitinase, and other polysaccharide-degrading enzyme and cellulose-binding domain (CBD)-contg. proteins of family III, IV, VII, VIII, IX, or X are used. A peptide from proteins involved in keratin biosynthesis or degrdn., or keratin binding domain of an enzyme can also be used. Detergent contg. the chimeric enzyme is claimed. Prepn. of chimeric enzymes comprising alk. protease, amylase, lipase, pectinase, laccase, peroxidase, and glucose oxidase with peptides mentioned above, and demonstration of improved cleaning power as detergent compn., are described.

L11 ANSWER 2 OF 12 SCISEARCH COPYRIGHT 2003 THOMSON ISI on STN DUPLICATE 1

AB An alkaline, SDS-stable protease optimally active at pH 11 from a *Bacillus* sp. RGR-14 was produced in a complex medium containing soybean meal, starch and calcium carbonate. The protease was active over a wide temperature range of 20-80 degreesC with major activity between 45 and 70 degreesC. The protease was completely stable for 1 h in 0.1% SDS and retained 70% of its activity in the presence of 0.5% SDS after 1 h of incubation. The enzyme was active in presence of surfactants (ionic and non-ionic) with 29% enhancement in activity in Tween-85 and was also stable in various oxidizing agents with 100 and 60% activity in presence of 1% sodium perborate and 1% H₂O₂, respectively. The enzyme was also compatible with commercial detergents (1% w/v) such as Surf, Ariel, Wheel, Fena and Nirma, retaining more than 70% activity in all the detergents after 1 h. Wash performance analysis of grass and blood **stains** on **cotton** fabric showed an increase in reflectance (14 and 25% with grass and blood stains, respectively) after enzyme treatment. However, enzyme in conjunction with detergent proved best, with a maximum reflectance change of 46 and 34% for grass and blood stain removal, respectively, at 45 degreesC. **Stain** removal was also effective after **protease** treatment at 25 and 60 degreesC.

L11 ANSWER 3 OF 12 TEXTILETECH COPYRIGHT 2003 Inst. of Textile Technology on STN

AB Chemical suppliers recommend treatments for removing six types of stains that commonly occur on restaurant table linen: ketchup, mustard, coffee, tea, salad oil, and lipstick. Some suppliers report successful removal of all six types of stain with a single formulation used at relatively low washing temperatures. Phillips & Associates, a testing laboratory located in Arden Mills, Minnesota, reports good success using a new generation of enzymes in a light soil washing formula on 100 percent cotton, 50/50 cotton blends, and 100 percent synthetic linens. The treatment calls for 30-40 minutes of washing at a neutral pH and at a water temperature of 140 degrees Fahrenheit. Unichem and U.N.X. recommend a combination of three enzymes: lipase, proteases, and amylases. Lipase removes fat based **stains**. **Proteases** attack protein-based **stains**, and amylases remove residues of food products. Other suppliers recommend different stain removal formulas. Professional Detergent Products offers a combination of detergent, bleach, and enzyme that removes food **stains** from white and colored **cotton** and polyester table linens. Other suppliers believe that the simultaneous removal of these six types of stains at low temperatures with one formulation is impossible. Frank Kappler of Gurtler Chemicals and Tom Hall of Hilden Halifax maintain that high water temperature is essential to removing some stains. Other chemists, such as Jack Reiff of Wet-Tech,

believe that careful treatment of specific categories of stain with special formulations is the only proper means of removal.

L11 ANSWER 4 OF 12 HCAPLUS COPYRIGHT 2003 ACS on STN

AB The title compns. are composed of alk. protease 0.2-20, sulfite salts 5-50, complexes 3-50, .gtoreq.1 anionic surfactants selected from alkyl ether sulfate ester salts, alkyl sulfates, and .alpha.-sulfo fatty acid ester salts 3-50, and polyoxyethylene alkyl ethers or polyoxyethylene alkylphenyl ethers 0.1-10% and show pH 8-11 as 0.1-10% aq. soln. Thus, an aq. detergent (pH 9.3) contained alk. protease 10, Na₂SO₃ 30, EDTA Na salt 10, Na gluconate 10, Na citrate 10, polyoxyethylene lauryl ether Na sulfate 20, and polyoxyethylene lauryl ether 10%.

L11 ANSWER 5 OF 12 TEXTILETECH COPYRIGHT 2003 Inst. of Textile Technology on STN

AB The effects of mechanical action for detergency in the washing process were studied with and without protease. Fabric damage was examined. Results are presented.

L11 ANSWER 6 OF 12 HCAPLUS COPYRIGHT 2003 ACS on STN

AB The title influence was studied using cotton fabrics soiled with bovine blood (whole blood, defibrinated blood, blood plasma, blood serum). The blood protein stains adhered to the fabrics denatured with elapse of time in air and gradually became insol., and as a result it became very difficult to remove the blood protein stains from fabrics, compared with other water-sol. protein stains. However, when alk. protease produced by *Bacillus subtilis* var. having a wide range of substrate specificity and neutral or alk. protease produced by *Aspergillus oryzae* causing a decrease in viscosity of gelatin soln. were used, the detergency of blood protein stains was remarkably high. Esp., the removal efficiency of blood serum protein stains having low soly. or dispersibility in water increased >50-60% when washing solns. of protease activity >25 PU/mL were used. The fibrinogen in whole blood and blood plasma caused a decrease of soly. in water of these protein stains on the fabrics. In general, when protease was used, the removal efficiency was lower for the blood protein stains contg. fibrinogen than that without fibrinogen.

L11 ANSWER 7 OF 12 HCAPLUS COPYRIGHT 2003 ACS on STN

AB The use of .alpha.-amylase with alk. proteases in liq. detergent compns. enhances the removal of protein-based stains from fabrics during laundering. Thus, an aq. liq. detergent compn. contg. ethoxylated C12-15 fatty alcs. 32.0, Na dodecylbenzenesulfonate 7.0, triethanolamine 2.8, EtOH 5.0, Alcalase [9014-01-1] 0.4, Termamyl [9000-85-5] 0.2, and additives 2.33% gave 58.4% removal of blood stains and 44.8% removal of grass stains from cotton fabrics in a laundering test, compared with 55.5% and 36.1%, resp., when the detergent contained 0.8% Alcase and no Termamyl and 42.0% and 31.5%, resp., without either Alcase or Termamyl.

L11 ANSWER 8 OF 12 HCAPLUS COPYRIGHT 2003 ACS on STN

AB A stain remover contg. NH₃, enzymes, and a surfactant is useful for removing stains from textiles (not including wool). Thus, 50 mL 25% NH₃ soln., 0.4 g enzyme mixt. (proteases, amylases, and lipases), and 4 g soap were mixed with water to prep. 1 L stain remover. A stained textile was treated with the compn., heated to 55.degree. with steam, covered with an alkylarenesulfonate for 30 mins., and added to dry-cleaning bath to remove the stain.

L11 ANSWER 9 OF 12 WPIDS COPYRIGHT 2003 THOMSON DERWENT on STN

AB JP 57028197 A UPAB: 19980617

New bleaching detergent contains hollow percarbonate particles and enzyme. Pref. percarbonate is the Na salt. Specifically hollow percarbonate particles are obtd. by preparing an aq. mother liquid contg. 6.0-15.0 wt.% carbonate and 1.5-6.0 wt.% H₂O₂, and crystallising percarbonate by adding simultaneously or alternately particulate carbonate and aq. H₂O₂ soln. in such a way that the compsn. of the mother liquid is maintained to contain 6.0-15.0 wt.% carbonate and 1.5-6.0 wt.% H₂O₂ and that at least 2 mole carbonate is present per 3 mole H₂O₂. The average particle size of the

hollow percarbonate particle is pref. 100-2000 microns. Preferred enzyme is protease, lipase, or amylase.

Although the use of enzymes for removing **stains** on **textiles**, such as **protease** for protein, amylase for starch, and lipase for fat, etc. is known, the use of such enzymes in combination with a bleaching detergent has not previously been successful owing to the instability of these enzymes in percarbonate. It has now been found that the enzymes remain stable when hollow percarbonate particles are used. Thus a bleaching detergent having good detergency and bleaching effect and storage stability is obtained.

L11 ANSWER 10 OF 12 HCAPLUS COPYRIGHT 2003 ACS on STN

AB The degradn. of body sweat **stains** of **cotton** fabric by **protease** was studied. The hydrolysis obtained on hydrolyzing skin proteins with alk. or neutral protease was greater than obtained with papain [9001-73-4], trypsin [9002-07-7], or chymotrypsin [9004-07-3]. The amino acid compn. of skin protein was detd.

L11 ANSWER 11 OF 12 HCAPLUS COPYRIGHT 2003 ACS on STN

AB The efficiency of water to remove protein stains from fabrics was reduced by heating the steamed fabric to >60.degree. because the proteins were denatured by the heat. The addn. of protease [9001-92-7] to the detergent mixt. increases the detergency in the removal of denatured protein stains, esp. under alkali washing conditions.

L11 ANSWER 12 OF 12 HCAPLUS COPYRIGHT 2003 ACS on STN

AB An .alpha.-amylase [9000-90-2] was used to replace part of the protease [9001-92-7] in laundry detergents without loss of stain removal properties of the detergents. Thus, a detergent formulation contg. an alkylbenzenesulfonate and Na tripolyphosphate was mixed with 0.25% .alpha.-amylase and 0.25% Alcalase [9014-01-1] to prep. a detergent which had stain removal ability equal to that of a detergent contg. only 0.50% Alcalase.

=> d 9

L11 ANSWER 9 OF 12 WPIDS COPYRIGHT 2003 THOMSON DERWENT on STN

AN 1982-23235E [12] WPIDS

TI Enzyme-contg. bleaching detergent with improved storage stability - contg. percarbonate in form of hollow particles and e.g. protease, lipase or amylase.

DC D16 D25 E37

PA (KAOS) KAO SOAP CO LTD

CYC 1

PI JP 57028197 A 19820215 (198212)* 6p

JP 60021720 B 19850529 (198525)

ADT JP 57028197 A JP 1980-101941 19800725

PRAI JP 1980-101941 19800725

IC C11D003-39; C11D007-42

=> d 9 ab

L11 ANSWER 9 OF 12 WPIDS COPYRIGHT 2003 THOMSON DERWENT on STN

AB JP 57028197 A UPAB: 19980617

New bleaching detergent contains hollow percarbonate particles and enzyme. Preferred percarbonate is the Na salt. Specifically hollow percarbonate particles are obtained by preparing an aq. mother liquid contg. 6.0-15.0 wt.% carbonate and 1.5-6.0 wt.% H₂O₂, and crystallising percarbonate by adding simultaneously or alternately particulate carbonate and aq. H₂O₂ soln. in such a way that the compsn. of the mother liquid is maintained to contain 6.0-15.0 wt.% carbonate and 1.5-6.0 wt.% H₂O₂ and that at least 2 mole carbonate is present per 3 mole H₂O₂. The average particle size of the hollow percarbonate particles is pref. 100-2000 microns. Preferred enzyme is protease, lipase, or amylase.

Although the use of enzymes for removing **stains** on **textiles**, such as **protease** for protein, amylase for

starch, and lipase for fat etc. is known, the use of such enzymes in combination with a bleaching detergent has not previously been successful owing to the instability of these enzymes in percarbonate. It has now been found that the enzymes remain stable when hollow percarbonate particles are used. Thus a bleaching detergent having good detergency and bleaching effect and storage stability is obtd..

=> d 10

L11 ANSWER 10 OF 12 HCAPLUS COPYRIGHT 2003 ACS on STN
AN 1978:461355 HCAPLUS
DN 89:61355
TI Removal of proteins from fabrics by **protease**. Part 7. Skin
grime **stains** deposited on clothes
AU Minagawa, Motoi; Okamoto, Ikuko
CS Osaka City Univ., Osaka, Japan
SO Sen'i Seihin Shohi Kagaku (1978), 19(3), 34-43
CODEN: SESKB9; ISSN: 0037-2072
DT Journal
LA Japanese

=> d 10 ab

L11 ANSWER 10 OF 12 HCAPLUS COPYRIGHT 2003 ACS on STN
AB The degrdn. of body sweat **stains** of **cotton** fabric by
protease was studied. The hydrolysis obtained on hydrolyzing skin
proteins with alk. or neutral protease was greater than obtained with
papain [9001-73-4], trypsin [9002-07-7], or chymotrypsin [9004-07-3].
The amino acid compn. of skin protein was detd.

=> dis his

(FILE 'HOME' ENTERED AT 18:00:19 ON 19 AUG 2003)

FILE 'STNGUIDE' ENTERED AT 18:00:43 ON 19 AUG 2003

L1 0 S STAIN AND (SWATCH OR TEXTILE OR COTTON)
L2 0 S STAIN
L3 0 S SUBTILISIN
L4 14 S TEXTILE

FILE 'STNGUIDE' ENTERED AT 18:05:15 ON 19 AUG 2003

L5 14 S TEXTILE#

FILE 'MEDLINE, SCISEARCH, LIFESCI, BIOTECHDS, BIOSIS, EMBASE, HCAPLUS,
NTIS, ESBIOBASE, BIOTECHNO, WPIDS, TEXTILETECH, WTEXTILES, CIN' ENTERED
AT 18:10:45 ON 19 AUG 2003

L6 179 S STAIN (5A) PROTEASE
L7 0 S L6 (5A) FIX?
L8 0 S L6 (5A) CROSSLINK?
L9 1785 S STAIN (5A) (SWATCH OR TEXTILE OR COTTON)
L10 17 S L6 AND L9
L11 12 DUP REM L10 (5 DUPLICATES REMOVED)

=> s stain (5a) subtilisin

L12 10 STAIN (5A) SUBTILISIN

=> dup rem l12

PROCESSING COMPLETED FOR L12

L13 10 DUP REM L12 (0 DUPLICATES REMOVED)

=> d 1-10

L13 ANSWER 1 OF 10 HCAPLUS COPYRIGHT 2003 ACS on STN
AN 2003:488640 HCAPLUS
DN 139:65419

TI Generation of bacterial subtilisin variants with improved characteristics
for use in detergents
IN Kettling, Ulrich; Koltermann, Andre; Kensch, Oliver; Kuhlemann, Rene;
Haupts, Ulrich; Rarbach, Markus; Odenthal, Konrad
PA Direvo Biotech AG, Germany
SO Eur. Pat. Appl., 34 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1321513	A1	20030625	EP 2001-130636	20011221
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	WO 2003054127	A2	20030703	WO 2002-EP14448	20021218
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI	EP 2001-130636	A	20011221		
RE.CNT	6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD ALL CITATIONS AVAILABLE IN THE RE FORMAT				

L13 ANSWER 2 OF 10 HCAPLUS COPYRIGHT 2003 ACS on STN
AN 2002:293829 HCAPLUS
DN 136:321289
TI Subtilase variants with decreased sensitivity to trypsin inhibitors
present in egg stains
IN Norregaard-Madsen, Mads; Larsen, Line Bloch; Hansen, Peter Kamp
PA Novozymes A/S, Den.
SO PCT Int. Appl., 93 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002031133	A1	20020418	WO 2001-DK667	20011012
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2002010379	A5	20020422	AU 2002-10379	20011012
	US 2002155575	A1	20021024	US 2001-976414	20011012
	EP 1326966	A1	20030716	EP 2001-978206	20011012
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
PRAI	DK 2000-1528	A	20001013		
	US 2000-241201P	P	20001017		
	WO 2001-DK667	W	20011012		
RE.CNT	3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD ALL CITATIONS AVAILABLE IN THE RE FORMAT				

L13 ANSWER 3 OF 10 HCAPLUS COPYRIGHT 2003 ACS on STN
AN 2001:693480 HCAPLUS

AU Rollence, Michele L.; Filippini, David; Pantoliano, Michael W.; Bryan, Philip N.
CS Dep. Biochem. Genet., Genex Corp., Gaithersburg, MD, 20877, USA
SO Critical Reviews in Biotechnology (1988), 8(3), 217-24
CODEN: CRBTE5; ISSN: 0738-8551
DT Journal; General Review
LA English

L13 ANSWER 10 OF 10 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 1987:601013 HCAPLUS

DN 107:201013

TI Protein stain-removing compositions

IN Lad, Pushkaraj J.

PA Genencor, Inc., USA

SO Eur. Pat. Appl., 11 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 233721	A2	19870826	EP 1987-300845	19870130
	EP 233721	A3	19880831		
	R: CH, DE, FR, GB, IT, LI, NL, SE				
	AU 8768701	A1	19870813	AU 1987-68701	19870211
	DK 8700710	A	19870813	DK 1987-710	19870212
	JP 62265398	A2	19871118	JP 1987-30643	19870212
PRAI	US 1986-828773		19860212		
	US 1986-885224		19860714		

=> d 4-10 ab

L13 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2003 ACS on STN

AB Subtilase variants showing improved storage stability and/or stain removal performance as components of detergent compns. are obtained by substituting .gtoreq.1 amino acid residue situated in or near a hydrophobic domain of the parent subtilase for an amino acid residue which is more hydrophobic. The enzymes are esp. useful in liq. detergent compns. and soap bars.

L13 ANSWER 5 OF 10 CIN COPYRIGHT 2003 ACS on STN

AB Since the 1960s, detergent manufacturers have used enzymes from soil bacteria to break down dirt and protein-based stains. But the enzymes don't function as well in a washing machine as they do in the backyard. Take the enzyme subtilisin. Water treated by softeners pulls calcium away from subtilisin, making it unstable and inactive. So detergent makers are forced to add costly stabilizers. That's where the University of Maryland's Center for Advanced Research in Biotechnology comes in. With partial funding from Procter & Gamble Co., a team led by structural biologist Philip N. Bryan focused on calcium. They modified the gene that codes for subtilisin so the enzyme doesn't need calcium to remain stable and active. Procter & Gamble has options to use the university-patented enzyme.

L13 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2003 ACS on STN

AB An alkyl (esp. C12-16) sulfate surfactant is used in laundry detergent compns. contg. subtilisins or subtilisin variants having a glutamic acid residue in position 195 and/or an alanine residue in position 222 to improve the stain removal activity of the enzymes, e.g., on cotton fabrics contg. grass stains.

L13 ANSWER 7 OF 10 SCISEARCH COPYRIGHT 2003 THOMSON ISI on STN

AB Subtilisins are a class of alkaline serine proteases produced by a variety of Bacillus species. The primary commercial use of subtilisins is as additives in detergent formulations to aid in the removal of proteinaceous **stains**. Until recently, commercial availability of **subtilisins** was limited to those produced by certain strains

DN 135:274599
 TI Subtilase enzyme having an improved wash performance on egg stains
 IN Mikkelsen, Frank; Fano, Tina Sejersgaard; Madsen, Mads Noerregaard;
 Hansen, Line Bloch; Hansen, Peter Kamp
 PA Novozymes A/S, Den.
 SO PCT Int. Appl., 84 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001068821	A2	20010920	WO 2001-DK163	20010312
	WO 2001068821	A3	20020404		
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
EP	1272623	A2	20030108	EP 2001-913739	20010312
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR			
PRAI	DK 2000-405	A	20000314		
	WO 2001-DK163	W	20010312		

L13 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2003 ACS on STN
 AN 1997:296 HCAPLUS
 DN 126:33503
 TI Subtilisin variants for use in detergent compositions
 IN Klugkist, Jan; Markvardsen, Peter; Von Der Osten, Claus; Sierkstra, Laurens Nicolaas; Bauditz, Peter
 PA Unilever N.V., Neth.; Unilever Plc
 SO PCT Int. Appl., 72 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9634935	A2	19961107	WO 1996-EP1610	19960412
	WO 9634935	A3	19970116		
	W:	AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI			
	RW:	KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML			
CA	2217162	AA	19961107	CA 1996-2217162	19960412
AU	9656465	A1	19961121	AU 1996-56465	19960412
EP	827531	A2	19980311	EP 1996-913508	19960412
	R:	DE, ES, FR, GB, IT			
BR	9608126	A	19990209	BR 1996-8126	19960412
JP	11505275	T2	19990518	JP 1996-532961	19960412
PL	184399	B1	20021031	PL 1996-323188	19960412
ZA	9603567	A	19971106	ZA 1996-3567	19960506
US	5837517	A	19981117	US 1996-642987	19960506
US	6190900	B1	20010220	US 1998-120577	19980722
PRAI	EP 1995-201161	A	19950505		
	DK 1995-519	A	19950505		
	DK 1996-421	A	19960412		
	WO 1996-EP1610	W	19960412		
	US 1996-642987	A1	19960506		

L13 ANSWER 5 OF 10 CIN COPYRIGHT 2003 ACS on STN

AN 25(18):19346E CIN
TI Tinkered genes, cleaner clothes?
SO Bus. Week, Ind./Technol. Ed., 22 Apr 1996 (960422), 3472, p. 91. ISSN:
0739-8395; CODEN: BWITEU.
LA English

L13 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 1992:594063 HCAPLUS
DN 117:194063
TI Detergent compositions containing alkyl sulfate and subtilisin or
subtilisin variants
IN Lindegaard, Poul; Aaslyng, Dorrit Anita
PA Novo Nordisk A/S, Den.
SO PCT Int. Appl., 17 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9208778	A1	19920529	WO 1991-DK342	19911114
	W: BR, CA, FI, JP, KR, SU, US				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, NL, SE				
	CA 2095853	AA	19920515	CA 1991-2095853	19911114
	EP 557377	A1	19930901	EP 1991-920279	19911114
	EP 557377	B1	19960313		
	EP 557377	B2	20001025		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
	JP 06501509	T2	19940217	JP 1992-500018	19911114
	BR 9107020	A	19940503	BR 1991-7020	19911114
	AT 135395	E	19960315	AT 1991-920279	19911114
	RU 2108373	C1	19980410	RU 1993-34456	19911114
	US 5389307	A	19950214	US 1993-39042	19930406
PRAI	DK 1990-2714	A	19901114		
	WO 1991-DK342	W	19911114		

L13 ANSWER 7 OF 10 SCISEARCH COPYRIGHT 2003 THOMSON ISI on STN

AN 91:305747 SCISEARCH
GA The Genuine Article (R) Number: FM710
TI SUBTILISIN - COMMERCIALY RELEVANT MODEL FOR LARGE-SCALE ENZYME-PRODUCTION
AU CRABB W D (Reprint)
CS GENENCOR INT INC, DEPT MOLEC BIOL, 180 KIMBALL WAY, S SAN FRANCISCO, CA,
94080 (Reprint)
CYA USA
SO ACS SYMPOSIUM SERIES, (1991) Vol. 460, pp. 82-94.
DT Article; Journal
LA ENGLISH
REC Reference Count: 16
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

L13 ANSWER 8 OF 10 BIOTECHDS COPYRIGHT 2003 THOMSON DERWENT/ISI on STN

AN 1990-10231 BIOTECHDS
TI Subtilisin: a commercially relevant model for large-scale enzyme
production;
Bacillus amyloliquefaciens gene cloning, expression and site-directed
mutagenesis; enzyme engineering (conference abstract)
AU Crabb W D
CS Genencor
LO Genencor, Inc., 180 Kimball Way, South San Francisco, CA 94080, USA.
SO Abstr.Pap.Am.Chem.Soc.; (1990) 199 Meet., Pt.1, CELL22
CODEN: ACSRAL
DT Journal
LA English

L13 ANSWER 9 OF 10 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 1989:547926 HCAPLUS
DN 111:147926
TI Engineering thermostability in subtilisin BPN' by in vitro mutagenesis

of either *B.licheniformis* or *B.alcalophilus* which had undergone years of traditional strain development to enhance overall productivity. The advent of new genetic engineering techniques has given industrial enzyme producers the opportunity to commercialize enzymes from new sources or site-specific modified enzymes designed for defined applications. Strategies for the cloning and expression of the *B.amyloliquefaciens* subtilisin (BPN') will be presented.

- L13 ANSWER 8 OF 10 BIOTECHDS COPYRIGHT 2003 THOMSON DERWENT/ISI on STN
 AB Subtilisins (EC-3.4.21.14) are a class of alkaline serine proteases produced by a variety of *Bacillus* spp. The primary commercial use of subtilisin is as an additive in surfactant formulations to assist in the removal of proteinaceous **stains**. Commercial availability of **subtilisin** has been limited to enzymes produced by certain strains of either *Bacillus licheniformis* or *Bacillus alcalophilus*, which have undergone years of traditional strain development to enhance overall productivity. The advent of new genetic engineering and enzyme engineering techniques has given industrial enzyme producers the opportunity to commercialize enzymes from new sources, or to construct modified enzymes by site-directed mutagenesis for defined application. Strategies for cloning and expression of the *Bacillus amyloliquefaciens* subtilisin-BPN' gene were presented. (0 ref)
- L13 ANSWER 9 OF 10 HCAPLUS COPYRIGHT 2003 ACS on STN
 AB Random mutations were introduced into a plasmid-encoded subtilisin gene from *Bacillus amyloliquefaciens* using sodium bisulfite, nitrous acid, or formic acid. The mutated genes were cloned into a *Bacillus subtilis* **stain** which does not produce **subtilisin** and screened for increased subtilisin thermal stability. Eight different stabilizing mutations were found.
- L13 ANSWER 10 OF 10 HCAPLUS COPYRIGHT 2003 ACS on STN
 AB Compns. useful for removing stains such as blood from fabrics contain proteases and compds. cleaving disulfide bonds, e.g. subtilisin and Na2O3.

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(FILE 'HOME' ENTERED AT 18:00:19 ON 19 AUG 2003)

FILE 'STNGUIDE' ENTERED AT 18:00:43 ON 19 AUG 2003

- L1 0 S STAIN AND (SWATCH OR TEXTILE OR COTTON)
 L2 0 S STAIN
 L3 0 S SUBTILISIN
 L4 14 S TEXTILE

FILE 'STNGUIDE' ENTERED AT 18:05:15 ON 19 AUG 2003

- L5 14 S TEXTILE#

FILE 'MEDLINE, SCISEARCH, LIFESCI, BIOTECHDS, BIOSIS, EMBASE, HCAPLUS, NTIS, ESBIODBASE, BIOTECHNO, WPIDS, TEXTILETECH, WTEXTILES, CIN' ENTERED AT 18:10:45 ON 19 AUG 2003

- L6 179 S STAIN (5A) PROTEASE
 L7 0 S L6 (5A) FIX?
 L8 0 S L6 (5A) CROSSLINK?
 L9 1785 S STAIN (5A) (SWATCH OR TEXTILE OR COTTON)
 L10 17 S L6 AND L9
 L11 12 DUP REM L10 (5 DUPLICATES REMOVED)
 L12 10 S STAIN (5A) SUBTILISIN
 L13 10 DUP REM L12 (0 DUPLICATES REMOVED)

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FULL ESTIMATED COST	167.89	169.12
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION

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STN INTERNATIONAL SESSION SUSPENDED AT 18:45:20 ON 19 AUG 2003